

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
TETSUYA YANO ET AL.) : Examiner: Herbert J. Lilling
Application No.: 10/553,221) : Group Art Unit: 1657
Filed: April 30, 2004) : Confirmation No.: 9077
For: POLYHYDROXYALKANOATE-)
CONTAINING MAGNETIC)
STRUCTURE, AND)
MANUFACTURING METHOD)
AND USE THEREOF) : January 30, 2009

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

STATEMENT OF THE SUBSTANCE OF THE INTERVIEW

Sir:

This Statement is filed to summarize telephonic interviews conducted between the Examiner and Applicants' representative on January 22, 2009 and January 30, 2009.

On or about January 22, 2009, the Examiner contacted Applicants' undersigned attorney and requested permission to amend claim 1 as recited in the Interview Summary mailed January 30, 2009. Also, the Examiner indicated that if the non-elected claims are amended to be commensurate in scope with the presently pending claims, the non-elected claims will be rejoined.

On January 30, 2009, Applicants' attorney advised the Examiner that Applicants agree to the proposed changes in claim 1 and would like to proceed with the amendment to the

non-elected claims for the rejoinder. The Examiner requested the undersigned to attach the amended non-elected claims to a Statement of the Substance of the Interview for consideration.

Accordingly, the amended claims are provided below, starting on page 3 of this paper. Favorable consideration and expedient allowance of the application are respectfully requested.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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Claims

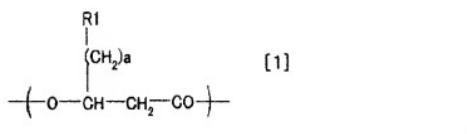
1. (Currently Amended) A-An encapsulated structure containing a mixture of a polyhydroxyalkanoate and a magnetic substance, the structure comprising:

an external phase part containing the polyhydroxyalkanoate and the magnetic substance; and

an internal phase part, which is contained in the external phase part.

2. (Original) A structure according to claim 1, wherein the structure is in the form of a microcapsule where the external phase part forms a shell and the internal phase part forms a core.

3. (Previously Presented) A structure according to claim 1, wherein the polyhydroxyalkanoate comprises polyhydroxyalkanoate including at least one selected from the group consisting of monomer units represented by formulae [1] to [10]:



wherein the monomer unit is at least one selected from the group consisting of monomer units having respective combinations of RI and as follows:

a monomer unit where RI represents a hydrogen atom and a represents an integer from 0 to 10;

a monomer unit where RI represents a halogen atom and a represents an integer from 1 to 10;

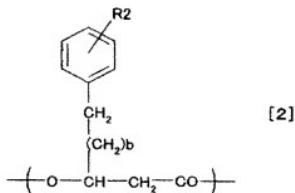
a monomer unit where R1 represents a chromophore and a represents an integer from 1 to 10;

a monomer unit where R1 represents a carboxyl group or a salt thereof and a represents an integer from 1 to 10; and

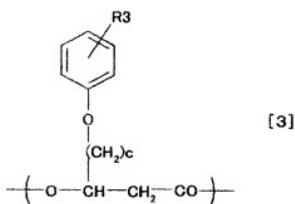
a monomer unit where R1 represents



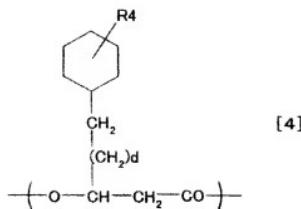
and a represents an integer from 1 to 7;



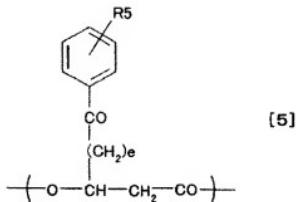
wherein b represents an integer from 0 to 7, and R2 represents one selected from the group consisting of a hydrogen atom, a halogen atom, -CN, NO₂, -CF₃, -C₂F₅, and -C₃F₇;



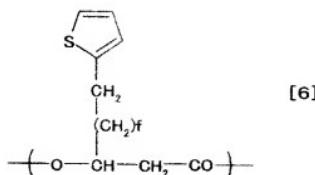
wherein c represents an integer from 1 to 8, and R3 represents one selected from the group consisting of a hydrogen atom, a halogen atom, -CN, -NO₂, -CF₃, -C₂F₅, and -C₃F₇;



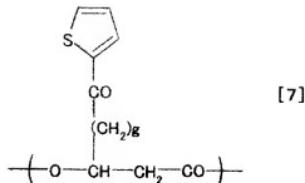
wherein d represents an integer from 1 to 7, and R4 represents one selected from the group consisting of a hydrogen atom, a halogen atom, -CN, -NO₂, -CF₃, -C₂F₅, and -C₃F₇;



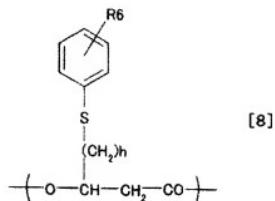
wherein e represents an integer from 1 to 8, and R5 represents one selected from the group consisting of a hydrogen atom, a halogen atom, -CN, -NO₂, -CF₃, -C₂F₅, -C₃F₇, -CH₃, -C₂H₅, and -C₃F₇;



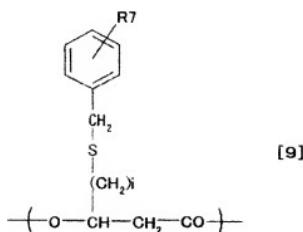
wherein f represents an integer from 0 to 7;



wherein g represents an integer from 1 to 8;

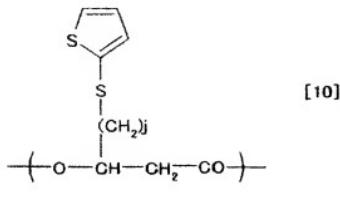


wherein h represents an integer from 1 to 7, and R6 represents one selected from the group consisting of a hydrogen atom, a halogen atom, -CN, -NO₂, -COOR', -SO₂R'', -CH₃, -C₂H₅, -C₃H₇, -CH(CH₃)₂, and -C(CH₃)₃, where R' represents one of a hydrogen atom, Na, K, -CH₃, and -C₂H₅ and R'' represents one of -OH, -ONa, -OK, a halogen atom, -OCH₃, and -OC₂H₅;



wherein i represents an integer from 1 to 7, and R7 represents one selected from

the group consisting of a hydrogen atom, a halogen atom, -CN, -NO₂, -COOR', and -SO₂R'', where R' represents one of a hydrogen atom, Na, K, -CH₃, and -C₂H₅ and R'' represents one of -OH, -ONa, -OK, a halogen atom, -OCH₃, and -OC₂H₅; and



wherein j represents an integer from 1 to 9.

4. (Original) A structure according to claim 1, wherein the polyhydroxyalkanoate has a number average molecular weight of 5,000 to 1,000,000.

5. (Original) A structure according to claim 1, wherein a monomer unit composition of the polyhydroxyalkanoate varies in a direction from the inside toward the outside of the structure.

6. (Original) A structure according to claim 1, wherein at least a portion of the polyhydroxyalkanoate comprises a chemically modified polyhydroxyalkanoate.

7. (Currently Amended) A method for manufacturing ~~method for a-an~~
encapsulated structure containing a mixture of a polyhydroxyalkanoate and a magnetic
substance, the structure having an external phase part containing the polyhydroxyalkanoate and

the magnetic substance and an internal phase part, which is contained in the external phase part with at least one of the external phase part and the internal phase part containing a magnetic substance, the method comprising the steps of:

preparing a liquid raw material including an oil phase containing the polyhydroxyalkanoate and an organic solvent, a water phase, and the magnetic substance; and removing at least one of the organic solvent and ~~the~~ water from the liquid raw material,

wherein the inner phase part ~~being~~ is contained in the external phase part including the polyhydroxyalkanoate PHA-derived from the oil phase or the water phase, and wherein at least ~~one~~ of the external phase part and the internal phase part contains the magnetic substance.

8. (Currently Amended) A ~~manufacturing~~ method for a structure according to claim 7, further comprising ~~the~~ a step of preparing an emulsion using the water phase and the oil phase.

9. (Currently Amended) A ~~manufacturing~~ method for a structure according to claim 8, further comprising the steps of:

preparing a W/O type-emulsion by dispersing the water phase in the oil phase; and removing at least one of the organic solvent and the water from the W/O type emulsion.

10. (Currently Amended) A ~~manufacturing~~ method for a structure according

to claim 8, further comprising the steps of:

preparing a W/O type-emulsion by dispersing the water phase in the oil phase;

preparing a W/O/W type-emulsion by dispersing the W/O type-emulsion in a second water phase; and

removing at least one of the organic solvent and the water from the W/O/W type emulsion.

11. (Currently Amended) A ~~manufacturing~~-method for a structure according to claim 8, further comprising the steps of:

preparing an O/W type-emulsion by dispersing the oil phase in the water phase;

and

removing at least one of the organic solvent and the water from the O/W type emulsion.

12. (Currently Amended) A ~~manufacturing~~-method for a structure according to claim 7, wherein the removal of at least one of the organic solvent and the water is performed by at least one method selected from the group consisting of a submerged drying method, a phase separation method, and a spray drying method.

13. (Currently Amended) A method for manufacturing method for a an encapsulated structure containing a mixture of a polyhydroxyalkanoate and a magnetic substance, the structure having an external phase part containing the polyhydroxyalkanoate and the magnetic material and an internal phase part, which is contained in the external phase part, at

least one of the external phase part and the internal phase part containing a magnetic substance,
the method comprising the steps of:

preparing a water phase containing a polyhydroxyalkanoate synthetic enzyme and
a 3-hydroxyacyl coenzyme A;

preparing an oil phase containing an organic solvent;

preparing an emulsion containing the water phase, the oil phase, and the magnetic
substance;

synthesizing the polyhydroxyalkanoate by polymerizing the 3-hydroxyacyl
coenzyme A with the polyhydroxyalkanoate synthetic enzyme in the emulsion; and

removing at least one of the organic solvent and ~~the~~-water from the emulsion,
wherein the inner phase part ~~being~~is contained in the external phase part
including the polyhydroxyalkanoate PHA-derived from the oil phase or the water phase, and
wherein at least ~~one~~ of the external phase part ~~and the internal phase part~~
~~containing~~contains the magnetic substance.

14. (Currently Amended) A ~~manufacturing~~ method for a structure according
to claim 13, further comprising the steps of:

preparing a W/O type-emulsion by dispersing the water phase in the oil phase; and
removing at least one of the organic solvent and the water from the W/O type
emulsion.

15. (Currently Amended) A ~~manufacturing~~ method for a structure according
to claim 13, comprising the steps of:

preparing a W/O type-emulsion by dispersing a first water phase in the oil phase;

preparing a W/O/W type-emulsion by further dispersing the W/O type-emulsion in a second water phase; and

removing at least one of the organic solvent and the water from the W/O/W type emulsion.

16. (Currently Amended) A ~~manufacturing~~ method for a structure according to claim 15, wherein at least one of the first water phase and the second water phase contains a polyhydroxyalkanoate synthetic enzyme and a 3-hydroxyacyl coenzyme A.

17. (Currently Amended) A ~~manufacturing~~ method for a structure according to claim 13, further comprising the steps of:

preparing an O/W type-emulsion by dispersing the oil phase in the water phase;
and
removing at least one of the organic solvent and the water from the O/W type emulsion.

18. (Currently Amended) A ~~manufacturing~~ method for a structure according to claim 13, comprising the steps of:

preparing an O/W type-emulsion by dispersing a first oil phase in the water phase;
preparing an O/W/O type-emulsion by further dispersing the O/W type-emulsion in a second oil phase; and
removing at least one of the organic solvent and the water from the O/W/O type

emulsion.

19. (Currently Amended) A ~~manufacturing~~ method for a structure according to claim 14, wherein a composition of a 3-hydroxyalkanoate unit in the polyhydroxyalkanoate varies in a direction from ~~the an~~ inside to ~~the an~~ outside of the structure by changing a composition of the 3-hydroxyacyl coenzyme A with time.

20. (Original) A structure according to claim 1, wherein the internal phase contains a pharmaceutical component.

21. (Previously Presented) A structure according to claim 1, wherein the internal phase also contains the magnetic substance.